

What is claimed is:

1. A shelf for containing liquids spilled thereon, comprising:
  - a shelf having a substantially planar surface; and
  - a barrier for containing spilled liquids to said shelf, said barrier including at least one
- 5 upwardly turned portion integrally formed from said planar surface and end caps located adjacent said upwardly turned portion to complete said barrier.
2. An interior compartment of an appliance having at least one shelf for containing liquids spilled thereon, comprising:
  - 10 an interior compartment of an appliance having at least one shelf located therein, said shelf having a substantially planar surface; and
  - a barrier for containing spilled liquids to said shelf, said barrier including at least one
- 15 upwardly turned portion formed from said upper surface and end caps located adjacent said upwardly turned portion to complete said barrier.
3. An interior compartment as defined in claim 2, wherein said interior compartment has a rear wall, a left wall, a right wall, a top, a bottom and a door.
4. A shelf as defined in claim 1, wherein said shelf is a half-width shelf for a side-by-side
- 20 refrigerator and freezer unit.

5. A shelf as defined in claim 1, wherein said shelf is a half-width shelf for an over-under refrigerator and freezer unit.

6. A shelf as defined in claim 1, wherein said substantially planar surface is an optically clear, tempered glass plate having an upper surface, a lower surface, and a perimeter edge having a front edge, a left edge, a right edge and a rear edge.

7. A shelf as defined in claim 5, wherein said glass plate is a soda-lime-silicate glass plate.

8. A shelf as defined in claim 1, wherein at least one portion of said plate adjacent one edge is upwardly turned to create a barrier for spilled liquids.

9. A shelf as defined in claim 1, wherein two portions of the plate adjacent two different edges are upwardly turned to create two barriers for spilled liquids.

10. A shelf as defined in claim 9, wherein a portion of said plate adjacent said front edge is upwardly turned, and a portion of said plate adjacent said rear edge is upwardly turned.

11. A shelf as defined in claim 10, wherein said upwardly turned portion adjacent said front edge is a front flange, and said upwardly turned portion adjacent said rear edge is a rear flange.

12. A shelf as defined in claim 11, wherein said front flange has an upper and lower surface.

13. A shelf as defined in claim 11, wherein said rear flange has an upper and a lower surface.

5 14. A shelf as defined in claim 6, wherein said end caps are located on said left and said right edges of said plate.

15. A shelf as defined in claim 11, wherein said flanges are approximately .157 to .315 inches wide.

16. A shelf as defined in claim 15, wherein said flanges are approximately .236 inches wide.

17. A shelf as defined in claim 11, wherein said flanges are upwardly turned approximately 30 to 90 degrees from the horizontal.

18. A shelf as defined in claim 17, wherein said flanges are upwardly turned approximately 45 degrees from the horizontal.

19. A shelf as defined in claim 11, wherein a coating is located on said flanges to impart  
20 impact resistance to said flanges.

20. A shelf as defined in claim 19, wherein said coating is approximately .118 to .197 inches thick.

21. A shelf as defined in claim 19, wherein said coating is a polyester material.

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22. A shelf as defined in claim 1, wherein said end caps have a top, a left, a right, a bottom, a front and a rear surface.

23. A shelf as defined in claim 11, wherein said end caps meet with said upwardly turned front and rear flanges to form a reservoir for spilled liquids.

24. A shelf as defined in claim 14, wherein a seal is located between said plate and said right and left end caps to form a fluid tight barrier between said plate and said end caps.

15 25. A shelf as defined in claim 24, wherein said seal is a siloxane-type polymer.

26. A shelf as defined in claim 24, wherein said seal is a room temperature vulcanizing silicon adhesive.

20 27. An interior compartment as defined in claim 3, wherein said compartment has a plurality of channels integrally formed with said left and right walls of said compartment.

28. An interior compartment as defined in claim 27, wherein said channels are located along a plurality of spaced-apart vertical intervals in said compartment to accommodate a variety of shelf positions.

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29. An interior compartment as defined in claim 28, wherein said channels are substantially rectangular.

30. An interior compartment as defined in claim 3, wherein said shelf is located away from said rear wall and said door to facilitate air circulation within said compartment.

31. An interior compartment as defined in claim 28, wherein said end caps slidably engage with said channels.

32. A shelf as defined in claim 1, further comprising a cantilever beam located on said bottom surface of said end cap.

33. A shelf as defined in claim 32, wherein said cantilever beam has a front edge, a rear edge, a top edge, a bottom edge, and a left and a right surface.

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34. A shelf as defined in claim 33, wherein said top edge is securely located to said bottom surface of said end cap.

35. A shelf as defined in claim 3, further comprising tracks located on said rear wall of said  
5 compartment and extending from said bottom to said top of said compartment

36. A shelf as defined in claim 35, wherein said tracks have located thereon a plurality of pairs of slots.

37. A shelf as defined in claim 36, wherein said shelf has means for releasably engaging with  
10 said tracks.

38. A shelf as defined in claim 37, wherein said means includes at least two hooks integrally formed with said beam which releasably engage with said slot pairs.

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39. A shelf as defined in claim 38, wherein said hooks maintain said shelf away from said rear wall and said door to facilitate air circulation.

40. A shelf as defined in claim 1, further comprising a plurality of lights located within said  
20 end caps to illuminate said shelf.

41. A shelf as defined in claim 40, wherein said lights and the wiring for said lights are located within said end caps to reduce the possibility of electrical shock.

42. A shelf as defined in claim 40, further comprising at least one male electrical connector post located on said end cap and electrically connected to said lights.

43. A shelf as defined in claim 1, wherein at least one said male electrical connector post is spring loaded.

44. A shelf as defined in claim 35, further comprising at least one female electrical connector located in said tracks.

45. A shelf as defined in claim 44, further comprising one side of said track is positively charged and one side of said track is negatively charged, and at least one wire, printed on said shelf, electrically connects said tracks to provide power to said shelf.

46. A shelf as defined in claim 40, wherein at least one light is located substantially adjacent said plate.

47. A shelf as defined in claim 46, wherein at least one said light is located in an abutting relationship with an edge of said plate.

48. A shelf as defined in claim 46, wherein a plurality of lights are located in an abutting relationship with an edge of said plate.

49. A shelf as defined in claim 6, wherein said left and right edges of said plate are polished to aid in light transmittance.

50. A method for forming a shelf for containing spilled liquids thereon, comprising:  
deflecting at least one portion of a glass plate with at least one forming roller to create at least one portion of a barrier for spilled liquids located along at least one side of said plate; and  
locating end caps on the remaining sides of said plate to complete said barrier.

51. A method as defined in claim 50, wherein said barrier is at least one flange created by deflecting a portion of said plate adjacent an edge of said plate.

52. A method as defined in claim 51, wherein said barrier is two flanges created by deflecting portions adjacent two opposed edges of said plate.

53. A method as defined in claim 51, wherein said at least one flange is deflected along a guide in said plate.



54. A method as defined in claim 53, wherein said at least one flange is deflected along a kurf thereby providing an edge-like transition between said plate and said at least one flange.

55. A method as defined in claim 52, wherein said at least one flange is deflected without a  
5 guide in said plate.

56. A method as defined in claim 55, wherein deflecting said at least one flange without a guide provides a transition with a radius between said plate and said at least one flange.

57. A method as defined in claim 52, wherein a front flange is created in said plate by  
10 deflecting a portion adjacent a front edge of said plate and a rear flange is created in said plate by  
deflecting a portion adjacent a rear edge of said plate.

58. A method as defined in claim 50, further comprising heating said plate in an oven  
15 between approximately 1022 degrees F to approximately 1202 degrees F.

59. A method as defined in claim 58, wherein said plate is heated to approximately 1112  
degrees F.

60. A method as defined in claim 50, further comprising locating said plate into a pre-form heat section to heat said at least one flange for deflection of said at least one flange by said at least one forming roller.

5 61. A method as defined in claim 57, further comprising locating said plate in a pre-form heat section to heat said front and said rear flanges for deflection of said front and rear flanges by said at least one forming roller.

62. A method as defined in claim 60, wherein said at least one flange is heated and softened by at least one heating element directed substantially at said at least one flange in said pre-form heat section.

63. A method as defined in claim 61, wherein said front and said rear flanges are heated and softened by at least two heating elements directed substantially at said front and said rear flanges, respectively, in said pre-form heat section.

64. A method as defined in claim 50, further comprising forming said at least one flange with at least a first set of upper and lower forming rollers.

20 65. A method as defined in claim 64, wherein said upper and lower forming rollers are constructed of temperature resistant materials.

66. A method as defined in claim 65, wherein said upper and lower forming rollers are constructed of high-temperature steel.

5 67. A method as defined in claim 66, wherein said upper and lower forming rollers are encircled with temperature resistant ropes.

68. A method as defined in claim 67, wherein said temperature resistant ropes maintain said plate from said upper and lower forming rollers.

69. A method as defined in claim 67, wherein said temperature resistant ropes are located substantially along a cylindrical, constant diameter interior portion of said upper and lower rollers.

15 70. A method as defined in claim 67, wherein said ropes are approximately .125 to .5 inches in diameter.

71. A method as defined in claim 70, wherein said ropes are .25 inches in diameter.

20 72. A method as defined in claim 64, wherein said upper forming roller is bounded by a first frusto-conical section.

73. A method as defined in claim 72, wherein said upper forming roller is bounded by said first and a second frusto-conical section.

5 74. A method as defined in claim 73, wherein said first and second frusto-conical sections linearly increase said diameter of said upper forming roller.

75. A method as defined in claim 74, wherein said first and second frusto-conical sections urge said front and rear flanges downwardly.

76. A method as defined in claim 75, wherein said first and second frusto-conical sections urge said front and rear flanges downwardly at a deflection angle between approximately 30 and 90 degrees.

15 77. A method as defined in claim 76, wherein said first and second frusto-conical sections urge said front and rear flanges downwardly at a deflection angle approximately 45 degrees.

78. A method as defined in claim 60, wherein said flanges are urged downwardly by gravity.

79. A method as defined in claim 64, wherein said lower forming roller is bounded by a third frusto-conical section.

80. A method as defined in claim 64, wherein said lower forming roller is bounded by said  
5 third frusto-conical section and a fourth frusto-conical section.

81. A method as defined in claim 79, wherein said third and fourth frusto-conical sections have taper angles complimentary to said deflection angle of said first and second frusto-conical sections.

82. A method as defined in claim 51, further comprising maintaining said at least one flange in a downward orientation by contacting a lower surface of said at least one flange with at least one upper guide roller.

83. A method as defined in claim 82, wherein at least one upper guide roller deflects said at least one flange downwardly at a deflection angle between approximately 30 to 90 degrees.

84. A method as defined in claim 83, wherein at least one upper guide roller deflects said at least one flange downwardly at a deflection angle approximately 45 degrees.

85. A method as defined in claim 82, further comprising at least one lower guide roller located substantially below said at least one upper guide roller, said at least one lower guide roller having a constant diameter interior portion bounded by a first frusto-conical section.

5 86. A method as defined in claim 85, wherein said interior portion is bounded by said first frusto-conical section and a second frusto-conical section.

87. A method as defined in claim 86, wherein said first and second frusto-conical sections linearly decrease said constant diameter section of said interior portion of said roller.

88. A method as defined in claim 86, wherein said first and second frusto-conical sections have frusto-conical surfaces which accept said at least one flange of said plate being urged downwardly by said at least one upper guide roller.

15 89. A method as defined in claim 88, wherein said frusto-conical surfaces have a taper angle complimentary to said deflection angle of said at least one upper guide roller.

90. A method as defined in claim 89, wherein said frusto-conical surfaces minimize deflection of said at least one flange portion beyond said deflection angle.

91. A method as defined in claim 50, further comprising tempering said shelf in an air quench section.

92. A method as defined in claim 50, further comprising cooling said plate to ambient  
5 temperature by directing air over at least one surface of said plate.

93. A method as defined in claim 50, further comprising polishing said at least one side of  
said plate to facilitate light transmittance into said plate.

94. A method as defined in claim 50, wherein pre-molded end caps are located adjacent said  
at least one deflected portion to complete said barrier.

95. A method as defined in claim 50, wherein end caps are extruded onto said shelf adjacent  
said at least one deflected portion to complete said barrier.

96. A method as defined in claim 50, wherein said at least one light is located in said end  
caps.

97. A method as defined in claim 96, wherein said at least one light is robotically located  
20 within said end caps.

98. A method as defined in claim 96, wherein at least one light is manually located in said end caps.

99. A method as defined in claim 96, wherein electricity to said at least one light is reduced  
5 to reduce the risk of electrical shock.

100. A method as defined in claim 99, wherein said electricity is reduced by a transformer.

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